

From Table 1 it is seen that solar radiation intensities averaged slightly below the normal for September at Washington, D. C., and above normal at Madison, Wis., and Lincoln, Nebr. At Lincoln an intensity of 1.48 gram calories per minute per square centimeter measured at 10.30 a. m. of the 25th equals the highest intensity ever measured at that station in September. Throughout the entire day the intensity was very high, and only slightly lower in the afternoon than in the morning. At Madison, an intensity of 1.44 gram-calories at 11.45 a. m. of the 9th is only about 1 per cent less than the previous September maximum.

## 551.506 (261.1) WEATHER OF NORTH ATLANTIC AND ADJACENT OCEANS

### NORTH ATLANTIC OCEAN

By F. A. YOUNG

September was marked by an unusual degree of storm activity in tropical regions of the North Atlantic. In addition to the hurricane which devastated Miami on the 18th there were no fewer than four other storms of tropical origin. The hurricane of the 4th-21st was notable both for its length of life and widespread influence on shipping and was also responsible, in all probability, for the loss of two ships, the American steamship *Haleakala*, on the 9th and the British steamship *Loyal Citizen* on the 14th.

The first telegraphic indications of this hurricane to reach the Weather Bureau were received on the 8th and 9th, but reports subsequently received by mail show that it was in existence as early as the 4th. On this date the British steamship *Stornest*, bound from Newport News to Santos, came under its influence and on the early morning of the 5th experienced full hurricane winds. From the latter date it moved on a northwesterly course with diminishing speed and reached a position about 300 miles west of Bermuda on the 14th, whence it began to recurve.

On the 14th the British steamship *Mayaro* was in the calm center of the hurricane from 10.15 a. m. to 4 p. m. In a special report to the Weather Bureau Capt. A. Y. Drysdale states that he was surprised to find the sea within the center so moderate that a small boat could have been used with perfect safety. The atmosphere was "clammy and stuffy" and the weather cleared so that blue sky appeared in patches. Captain Drysdale was able to obtain sights to determine the position of his vessel—31° 49' N., 69° 11' W.

On the morning of the 14th, while the hurricane just described was southwest of Bermuda, telegraphic reports reaching the bureau indicated the existence of another disturbance about 200 miles northeast of St. Kitts. This moved rapidly west-northwestward and passed near Turks Island on the afternoon of the 16th. A special observation from that place, the last to be received until October 6, showed a pressure of 29.62 inches and a wind velocity of 100 miles an hour from the northwest.

This hurricane continued to move rapidly and reached the southeastern Florida coast on the morning of the 18th, the center passing directly over the city of Miami, where a Weather Bureau station is located. There was a lull in the wind of about 35 minutes, commencing at 6.45 a. m., and the barometer fell to 27.61 inches, the lowest pressure ever registered at a Weather Bureau station in the United States. Continuing its northwestward movement the hurricane reached the vicinity of

Table 2 shows a deficiency in the amount of radiation received on a horizontal surface from the sun and sky at all three stations due to excessive cloudiness.

At Washington the polarimeter was out of adjustment during most of the month. A reading obtained on the 8th gave a polarization of skylight of 51 per cent. Measurements made on four days at Madison give a mean of 70 per cent, with a maximum of 72 per cent on the 11th. The maximum is close to the average maximum for September at Madison; the mean is considerably higher than the September mean.

Pensacola and Mobile on the morning of the 20th. It dissipated to the northwest of New Orleans on the 22d. An account of this hurricane will appear in the October issue of the REVIEW.

On the 12th, while the first hurricane of the month was still south-southwest of Bermuda, a disturbance appeared near Swan Island, in the western Caribbean Sea, and moved northeastward over Cuba. After pursuing an irregular course and without attaining great intensity it dissipated over the southeastern Gulf of Mexico on the 17th. On the 12th, also, a fourth storm, this one of full hurricane intensity, appeared east of Bermuda, moving in a northeasterly direction. This storm was short lived, reports showing little evidence of its existence after the 13th.

On the 25th a fifth disturbance of tropical origin appeared southwest of the Azores, moving on a northeasterly course. On the 26th the station at Horta reported northerly winds reaching a maximum velocity of 76 miles an hour. By 4 p. m. of that day the center appeared to be somewhat north of the islands, the pressure at Horta having risen from 29.45 to 29.54 inches and the wind shifted to northwest. During the following 24 hours the center appears to have moved westward, or possibly southwestward, and to have increased in intensity. At 4 p. m. on the 27th the pressure at Horta had fallen to 29.18 inches, wind southeast, force 8. At 6 a. m. on the 28th the pressure at Horta was 29.08 inches, wind east-southeast, force 5. After this time conditions gradually moderated. A report from the French steamship *Sinara*, which was involved in this storm, will be found in the accompanying table.

TABLE 1.—Averages, departures, and extremes of atmospheric pressures at sea level, 8 a. m. (75th meridian), North Atlantic Ocean, September, 1926

Stations	Average pressure	Departure <sup>1</sup>	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Julianehaab, Greenland	29.57	( <sup>2</sup> )	30.12	22d	28.79	27th.
St. Johns, Newfoundland	29.97	-0.03	30.32	7th	29.36	23d.
Nantucket	30.13	+0.09	30.36	15th <sup>4</sup>	29.86	13th.
Hatteras	30.08	+0.05	30.22	24th	29.94	2d.
Key West	29.93	-0.04	30.06	1st	29.50	18th.
New Orleans	29.98	-0.01	30.12	25th <sup>4</sup>	29.50	21st.
Swan Island	29.81	-0.08	29.90	1st	29.70	18th.
Bermuda	30.08	+0.03	30.30	25th	29.92	13th. <sup>4</sup>
Horta, Azores	30.02	-0.14	30.46	4th	29.26	28th.
Lerwick, Shetland Islands	29.88	+0.04	30.22	1st	29.52	12th.
Valencia, Ireland	30.11	+0.12	30.42	22d	29.74	18th.
London	30.11	+0.11	30.44	1st	29.78	12th. <sup>4</sup>

<sup>1</sup> From normals shown on H. O. Pilot Chart based on observations at Greenwich mean noon, or 7 a. m., 75th Meridian.

<sup>2</sup> Mean of 27 observations; three days missing.

<sup>3</sup> No normal established.

<sup>4</sup> And on other dates.

The number of disturbances of extratropical origin was below the normal for September and over the eastern and middle sections of the steamer lanes gales were reported only on from two to three days.

The number of days with fog was not far from the normal over the Grand Banks, but somewhat in excess of normal along the American coast and over the eastern sections of the steamer lanes. Fog was reported on three days in the Straits of Gibraltar.

On the 1st and 2d St. Johns, Newfoundland, was near the center of a depression, although, judging from reports received, moderate weather prevailed over the entire ocean on both of these days. On the 3d this Low was central near 50° N., 35° W., and moderate westerly gales were reported from the southerly quadrants; it then moved rapidly northeastward, increasing in intensity, and on the 4th moderate to strong southwesterly gales swept over a limited area between the 55th and 60th parallels and the 15th and 20th meridians, while the station at Julianehaab, Greenland, reported a southwesterly wind, force 9, and a barometric reading of 29.22 inches.

On the 3d and 4th northeasterly gales prevailed over the region between Nantucket and the 60th meridian, accompanied by comparatively high barometric readings.

On the 6th there was a well-developed Low central near 45° N., 43° W., surrounded by a limited storm area, and also a depression over the Shetland Islands. On the 7th the western disturbance alone appeared on the map, being central near 45° N., 32° W.

On the 8th Belle Isle was near the center of a well-developed Low, although on that day, as well as the 9th, moderate weather prevailed over the entire ocean, with the exception of the tropical disturbance previously mentioned.

On the 10th the eastern section of the steamer lanes was covered by a depression that afterwards developed into an active disturbance of limited extent. On the 11th the center of this Low was near 55° N., 25° W., with moderate to strong southerly gales in the westerly quadrants.

Charts VIII to XV cover the period from the 15th to 22d, inclusive, when most unusual conditions prevailed, with three tropical disturbances on the map on one day, while during this period heavy weather was also reported by vessels in the steamer lanes and in the vicinity of the Azores.

On the 23d St. Johns, Newfoundland, was near the center of a Low that moved northeastward, and on the 24th was about 300 miles east of Belle Isle, with westerly gales near the center and moderate weather over the remainder of the ocean.

On the 26th a secondary Low was central near 50° N., 30° W., with northerly gales over a limited area in the westerly quadrants.

On the 29th and 30th moderate weather prevailed over the ocean generally, although on the latter date winds of force 7 were reported by vessels in the middle sections of the steamer lanes.

## OCEAN GALES AND STORMS, SEPTEMBER, 1926

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Albert Ballin, Ger. S. S.	Southampton.	New York.	44 36N.	46 30W.	Sept. 2.	9p., Sep. 2.	Sept. 3.	29.73	SSE	WSW., 9.	WNW	SW., 9.	WSW.-NW.
Andania, Br. S. S.	New York.	Plymouth.	40 29N.	73 11W.	2	Sp., 2	4	29.92	NE	NE., 7.	NNE	NE., 9.	Steady.
Rathlin Head, Br. S. S.	Middleborough.	Hampton Roads.	59 00N.	15 30W.	4	7a., 4	6	28.75	S	SW., 10.	WSW	—, 12.	
Stornest, Br. S. S.	Newport News.	Santos.	17 10N.	50 45W.	4	5a., 5	5	29.25	ENE	ESE., 12.	SE	ESE., 12.	ESE.-S.
La Crescenta, Br. S. S.	Liverpool.	Colon.	41 58N.	46 58W.	5	11p., 5	6	29.56	NE	NE., 9	N	NE., 10.	ENE.-N.
Idaho, Br. S. S.	Antwerp.	New York.	49 22N.	23 24W.	6	Noon, 7	7	30.13	W	SW., 7	WSW	SW., 8	SW.-WSW.
M. F. Elliott, Am. S. S.	Baytown.	Copenhagen.	54 40N.	28 00W.	9	4p., 10	11	29.70	NNW	SW., 4	NNW	NNW., 10	SW.-NNW.
Dakarian, Br. S. S.	Liverpool.	Kingston.	26 42N.	63 48W.	10	8p., 10	11	29.78	SE	SE., 9	SE	SE., 9	Steady.
La Crescenta, Br. S. S.	do.	Colon.	29 08N.	65 03W.	10	3a., 11	12	29.69	ENE	SE., 10	S	SSE., 11	ENE.-ESE.
Coldbrook, Am. S. S.	Antwerp.	New Orleans.	30 47N.	54 00W.	11	7a., 12	13	29.52	ESE	ESE., 12	W	ESE., 12	S.-E.-S.-W.
Amsterdam, Du. S. S.	Rotterdam.	Baton Rouge.	30 30N.	70 06W.	12	—, 13	14	29.49	E	NNE., 10	NW	NNE., 10	SE.-NNE.-NW.
Mayaro, Br. S. S.	New York.	Grenada.	31 49N.	69 11W.	13	—, 14	15	28.78	NE	S., 11	SW	NE., 12	E.-S.-SW.
Matura, Br. S. S.	Dominica.	New York.	19 50N.	63 55W.	14	6a., 15	15	28.82	NW	SW., —	SSE	S., 12	NW.-W.-SW.-SSE.
Youngstown, Am. S. S.	English Channel.	Galveston.	33 45N.	67 00W.	15	10p., 15	16	29.29	E	ESE., 7	NW	NNE., 12.	E.-NE.
Hilversum, Du. S.	Rotterdam.	Montreal.	53 57N.	33 45W.	15	Noon, 15	16	29.32	SW	WNW., 8	N	—, 9	
Gedania, Danz. S. S.	Canal Zone.	Charleston.	19 30N.	75 00W.	16	6p., 16	17	29.54	SW	NNW., 5	SSE	W., 10	
Fort St. George, Br. S. S.	New York.	Bermuda.	36 35N.	69 08W.	16	5p., 16	17	29.05	NE	SSW., 12	WNW	—, 12	S.-SW.
Lumina, Br. S. S.	Rotterdam.	New Orleans.	27 40N.	74 45W.	17	4p., 17	18	29.82	SE	SSE., 9	ESE	—, 9	Steady.
Nobles, Am. S. S.	Mediterranean.	New York.	35 15N.	63 38W.	17	3p., 17	18	29.75	S	WSW., —	W	WSW., 9	WSW.-W.
Bird City, Am. S. S.	Copenhagen.	Baltimore.	40 40N.	61 51W.	16	6p., 17	19	29.37	SE	ESE., —	N	—, 12	SE.-SW.-NE.
Middleham Castle, Br. S. S.	Galveston.	Havre.	47 03N.	21 36W.	17	Noon, 17	18	29.30	SSW	SSW., 8	S	S., 9	NE.-E.-SSW.
Michigan, Fr. S. S.	Havre.	Galveston.	24 35N.	81 28W.	18	5a., 18	21	29.18	N	N., 10	S	W., 10	
El Oceano, Am. S. S.	New York.	New York.	27 15N.	79 40W.	18	Noon, 18	18	29.62	ENE	E., 8	SE	ENE., 10	E.-ESE.
Concho, Am. S. S.	do.	do.	29 20N.	80 30W.	17	4a., 18	19	29.76	E	E., 8	E	E., 12	Steady.
Scaloria, Br. S. S.	New Orleans.	Hull.	37 32N.	60 02W.	18	Mdt., 18	20	29.30	W	SW., 9	SSE	SW., 11	W.-SW.
Albert Ballin, Ger. S. S.	New York.	Cherbourg.	41 00N.	61 40W.	17	Noon, 18	19	29.18	ENE	NNE., 12	SSE	NNE., 12	N.-NNE.
Martha Washington, Ital. S. S.	Lisbon.	New York.	41 00N.	63 10W.	17	1p., 18	19	29.70	SE	ENE., 10	NE	ESE., 10	ESE.-E.
Housatonic, Br. S. S.	London.	Philadelphia.	45 38N.	42 03W.	17	2p., 18	19	28.85	NNW	NNW., 8	NNW	NNW., 9	Steady.
Solitaire, Am. S. S.	Port Arthur.	Tampa.	26 32N.	87 15W.	19	10a., 19	19	29.53	WNW	WNW., 9	WNW	WNW., 9	NW.-W.
Berlin, Ger. S. S.	New York.	Cherbourg.	40 50N.	64 10W.	19	Noon, 19	19	29.77	N	NE., 9	E	NNE., 10	NNE.
Cogne, Ital. S. S.	Antwerp.	Hampton Roads.	36 46N.	32 43W.	19	4a., 19	19	29.96	W	WNW., 8	NW	WNW., 9	
De La Salle, Fr. S. S.	Houston.	Havre.	38 28N.	64 14W.	19	4a., 20	21	29.59	N	NNE., —	SE	NNE., 9	NE.-E.
Silverpine, Br. S. S.	Singapore.	New York.	36 33N.	64 33W.	19	Noon, 20	21	29.65	NW	WNW., 9	WNW	WNW., 9	WNW.-W.
Flandre, Fr. S. S.	Bordeaux.	Cristobal.	40 35N.	17 10W.	20	2p., 20	21	29.53	SE	SE., 8	WNW	SSE., 9	SE.-SW.
Housatonic, Br. S. S.	London.	Philadelphia.	42 14N.	57 20W.	21	11p., 21	22	29.22	E	N., 12	NNW	NNW., 12	ENE.-N.
Maine, Dan. S. S.	Copenhagen.	Boston.	59 30N.	12 10W.	20	4a., 21	21	29.92	S	W., 8	WNW	W., 9	SSW.-W.-WNW.